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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

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Paper No. 16

Application Number: 08/675,280

Filing Date: July 1, 1996

Appellant(s): Weber et al.

Mr. Jay M. Cantor

For Appellant

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EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed October 1, 1997.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1-2, 7-8 and 17-22 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

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(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

5,404,272	Lebailly et al.	4-1995
5,123,982	Kuzay	6-1992
4,408,659	Hermanns et al.	10-1983

(10) *New Prior Art*

No new prior art has been applied in this examiner's answer.

(11) *Grounds of Rejection*

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

Claims 1, 5, 7, 11, 17 and 19 are rejected under 35 U.S.C. § 103 as being unpatentable over Lebailly et al. in view of Kuzay.

The patent of Lebailly et al., in Figures 1-3, in column 1, lines 19-35 and in column 2, line 35 through column 4, line 5, discloses epoxy resin/metal plates (1,2) defining an enclosure/cavity and a highly thermally conductive surface region thereon. The enclosure comprises thermally conductive (aluminum, sintered metal, fibre flock), fibrous, porous material (5) homogeneously disposed within a phase change liquid and located within the cavity. The patent of Lebailly et al. fails to disclose the thermally conductive fibers being graphite and extending from the thermally conductive surface of the epoxy resin plates.

The patent of Kuzay, in Figures 1-3 and 5, in column 2, lines 40-58 and in column 3, lines 20-68, discloses a (silicon carbide) porous material (12) bonded to and externally extending from a thermally conductive surface (11,24) and homogeneously disposed within a cavity for the purpose of constantly channeling heat from the conductive surface to a phase change fluid. The limitation of the fibers claimed in claims 17 and 19 being graphite is considered to be an obvious design expedient in view of the recitation by Kuzay, in column 3, lines 20-23, "Porous material 12 is ... silicon carbide (SiC)", since graphite is a form of heated carbon, which does not solve any stated problem or produce any new and/or unexpected result. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Lebailly et al. a silicon carbide porous material

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bonded to and externally extending from the thermally conductive surface for the purpose of constantly channeling heat from the conductive surface to the phase change fluid as disclosed in Kuzay. Regarding claim 1, the fibers being bonded to and externally extending from the plate (1) as disclosed by the device of the combination of Lebailly et al. and Kuzay is read as a "matrix". Regarding claims 7 and 11, the porous material is considered to be homogeneously disposed within the cavity as illustrated in Figure 3 of Lebailly et al. and as illustrated in Figures 1-2 of Kuzay. The remaining limitations are considered to be clearly met.

Claims 2, 6, 8, 12, 18 and 20-24 are rejected under 35 U.S.C. § 103 as being unpatentable over Lebailly et al. in view of Kuzay as applied to claims 1, 5, 7, 11, 17 and 19 above, and further in view of Hermanns et al. The patent of Lebailly et al. as modified, discloses all the claimed features of the invention with the exception of the phase change material being a wax.

The patent of Hermanns et al., in Figures 1a-3b, in column 1, lines 27-29, in column 3, lines 25-29 and in column 4, lines 22-31, discloses a solid to liquid phase change material, such as a paraffin wax (1,1b), filled within an enclosed cavity for the purpose of uniformly transferring heat. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Lebailly et al. as modified, the phase change material being a wax for the purpose of uniformly transferring heat as disclosed in Hermanns et al. Regarding claims 8 and 12, the porous material is considered to be homogeneously disposed in the cavity as illustrated in Figure 3 of Lebailly et al. and as illustrated in Figures 1-2 of Kuzay.

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(12) *New Ground of Rejection*

This examiner's answer does not contain any new ground of rejection.

(13) *Response to argument*

Appellant's concerns directed toward the prior art not teaching the concept of having a single matrix composed of fibers and the plurality of fibers extending into a cavity are believed not well taken. Appellant's reference to "a single matrix" is considered to be moot since "a single matrix" has not been claimed nor disclosed in the originally filed specification. Lebailly et al. discloses epoxy resin/metal plates defining an enclosure/cavity and having a highly thermally conductive surface region thereon. The enclosure comprises a thermally conductive (aluminum, sintered metal, **fibre** flock), **fibrous**, porous material homogeneously disposed within a phase change liquid and located within the cavity. Kuzay discloses a (silicon carbide) porous material bonded to and externally extending from a thermally conductive surface and homogeneously disposed within a cavity for the purpose of constantly channeling heat from the conductive surface to a phase change fluid. Therefore, the device of the combination of Lebailly et al. and Kuzay includes bonding highly thermally conductive fibers to a thermally conductive plate where the fibers extend into an enclosure/cavity for the purpose of constantly channeling heat from the conductive surface of the plate to a phase change fluid located within the enclosure/cavity. The fibers bonded to (thermally coupled; integral with) the thermally conductive epoxy resin plate is read as a "matrix".

Appellant's concern directed toward the fabrication of his heat sink being economically superior to the prior art since no added step is required to attach the porous medium to the

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matrix is considered to be moot and non-commensurate in scope with the claims since there are no method claims being examined/rejected and method of manufacturing limitations in an apparatus claim are not given any patentable weight.

Appellant's concerns directed toward Lebailly et al. not disclosing a plurality of fibers are believed not well taken. Lebailly et al., in Figures 1-3 and in column 4, lines 3-10, discloses "The porous metallic material may consist of ... fibre flock" and "The form, the number, the dimensions of the metal threads may vary". Therefore, from above recitations Lebailly et al. is considered to disclose a plurality of fibers.

Appellant's concerns directed toward the thermally conductive fibers being "granite" are considered to be moot since "granite" fibers have not been claimed. However, the fibers being graphite as claimed in claims 17-20, are considered to be an obvious design expedient in view of the recitation by Kuzay "Porous material 12 is ... silicon carbide (SiC)" in column 3, lines 20-23, since graphite is a form of heated carbon, which does not solve any stated problem or produce any new and/or unexpected result. Furthermore, the recitation in Lebailly et al. in column 4, lines 3-6, "The porous metallic material may consist of ... aluminum" is considered to meet claim 5, aluminum porous material.

Appellant's concerns directed toward no such combination teaches or suggests a phase change material being a wax and having its initial phase being in a solid phase and the final phase being in a liquid phase are believed not well taken since Hermanns et al. discloses a paraffin wax phase change material having its initial phase being in a solid phase and its final phase being in a liquid phase and the phase change material being filled within an enclosed


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cavity for the purpose of uniformly transferring heat. Therefore, the device of the combination of Lebailly et al. as modified, discloses a paraffin wax phase change material having its initial phase being in a solid phase and its final phase being in a liquid phase and the phase change material being filled within an enclosed cavity for the purpose of uniformly transferring heat.

Appellant's concerns directed toward no such combination teaches or suggests the porous material being homogeneously disposed in the cavity are believed not well taken since the porous material is considered to be homogeneously disposed in the cavity as illustrated in Figure 3 of Lebailly et al. and as illustrated in Figures 1-2 of Kuzay.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


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PRIMARY EXAMINER
ART UNIT 347

C.A.
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